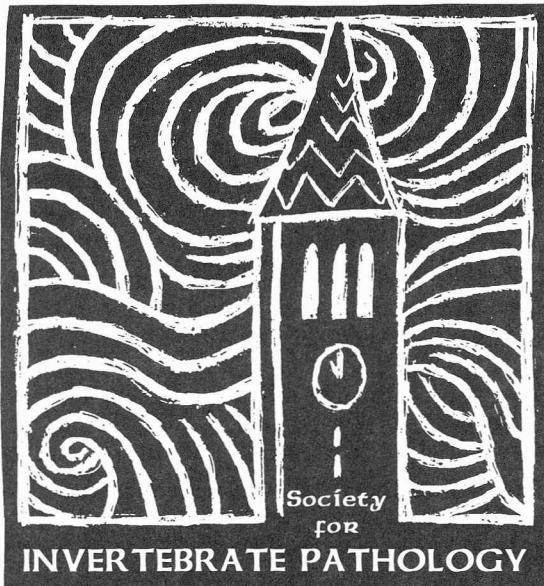


# Sip

## NEWSLETTER

society for invertebrate pathology

VOLUME 27, NUMBER 2  
May 1995



### 28th ANNUAL MEETING IN ITHACA, NEW YORK, JULY 16-21, 1995

The 1995 Annual Meeting of the Society will be held in Ithaca, New York on the Cornell University Campus. The meeting will begin on Sunday, July 21. However, for those wishing a little vacation and cheaper air fares, housing accommodations will be available for Saturday night. The Robert Purcell Center will be open from 7 a.m. to 11 p.m. for room assignments. Registration for the meeting will take place from 2-5 p.m. on Sunday, July 21. You will receive an area map with your confirmation of registration. If you have a car, you will need a parking permit for Monday thru Friday. Parking permits at the housing units will be provided free-of-charge. Parking on campus will involve an additional charge. Free campus bus passes will be provided, or you can enjoy leisurely and scenic walks through campus.



Ithaca Falls

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Deadline for the next Newsletter is September 15, 1995.

The mixer on Sunday evening will be from 6 to 8 p.m. in the recreational area across the street from the Purcell Center. The scientific sessions will occur at the Boyce Thompson Institute and adjacent buildings of the Veterinary College. For arrivals after Sunday, you should first go to the Purcell Center for housing and parking information. Registration materials will be available at the reception area of the Boyce Thompson Institute.

**Program:** REMEMBER!!! BRING YOUR PROGRAM & ABSTRACTS WITH YOU TO THE MEETING. Included with this newsletter is your copy of the Program and Abstracts booklet for the 28th Annual Meeting. Extra copies of the booklet will ONLY be available to non-members who have registered. **NOTE ABOUT BOARDS FOR POSTER PRESENTATIONS:** Please note this change from the last newsletter: the poster size will be 7' (2.1 m) high by 4' (1.2 m) wide. The height is measured FROM THE GROUND, so the usable working height is only about 5' (1.5 m).

#### **5-K Race: IMPORTANT CHANGE REGARDING THE 5K RACE**

Yes, folks, we've fully entered the litigative age. Due to Cornell University policy, we will not be able to hold a competitive 5K race on campus. And due to a variety of other factors, an off-campus venue for the race is not an option. But never fear! Read on!

We are thrilled to announce the FIRST-EVER SIP FUN RUN & WALK.

As you know, the spirit of the 'new science' embraces cooperation and collaboration as key elements. Competition is no longer 'de rigueur'. Therefore, this will be a NON-COMPETITIVE RUN/WALK. We will suggest a few possible routes around campus -- at least one of which will be approximately 5K -- and we'll provide liquid refreshment at the end of the run. We encourage the participation of all meeting attendees. We will record the names of all participants, and prizes (believe me, you WANT one of these prizes) will be awarded to participants on a completely random basis. We will not keep times, nor will we pigeon-hole you into stifling categories based on age or sex. Your entrance fee will still buy you a

#### **SIP NEWSLETTER**

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**Submissions to the following sections are solicited:**

**Forum:** More substantial articles on current issues of concern, limited to approximately five pages.

**Letters to the Editor:** Issues of concern can be brought up here.

**Microbial Control News:** Information on new discoveries, "News Releases", formation of companies etc. pertaining to microbial control.

We also depend on our members to supply us with information for the following sections: **Obituaries, Member News (Retirements, Awards, Promotions), Members on the Move (New addresses), Positions Available/Wanted, Meeting and Workshop Announcements, and other News Items.**

Send all submissions directly to the Editor in Lethbridge. Submissions via EMail or on computer disk (WP or ASCII) make our lives much easier and save on costs. Please include a hard copy of any text sent via computer disk. Please note change of address after 1 August, 1995 (see page 19)

**Deadline for the next Newsletter is September 15, 1995**

gorgeous t-shirt, printed with the meeting logo, and contribute to the purchase of prizes.

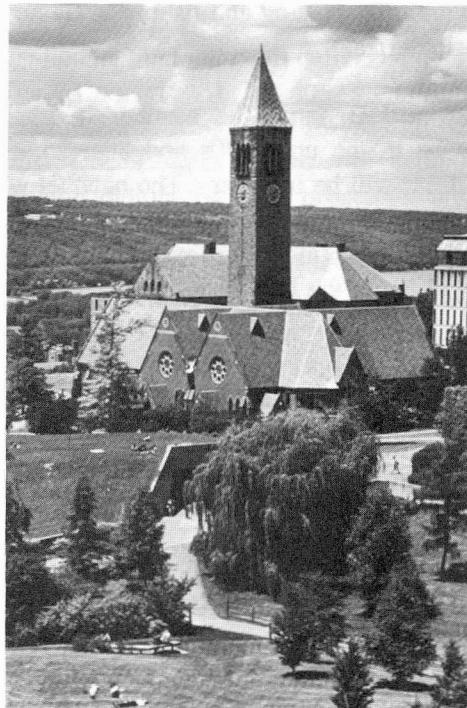
Just think of it! You can discuss science (perish the thought) with your colleagues as you enjoy a stroll or jog or run around the beautiful Cornell campus. You'll be able to stop and smell the roses without worrying about split times, shin splints, or what to wear to the banquet. And you'll do it all in the heady spirit and glorious mood of non-competitiveness.

Now for the small print: If you have already registered for the 5K race and you're one of those folks that gets out of bed only because you can compete and WIN, well, I guess (sigh), we'll refund your money. But not until we're convinced you've really seen how green is the grass on the other side of the competitive fence! Counseling for the non-competitively challenged will be provided.

**Tourist Information:** Ithaca is located at the south end of Cayuga Lake, in the heart of New York's beautiful and scenic Finger Lakes district. It is a popular destination for tourists, and has hiking, fishing, boating, swimming, shopping, wine-tasting and sightseeing all within easy reach.

The Cornell Plantations is a museum of living plants set in 200 park-like acres within a 5 minute walk of the Purcell Center. In addition to gardens featuring herbs, heritage and modern vegetables, international crops and weeds, etc., etc., there is a gift shop and the Newman Arboretum specializing in trees and shrubs native to New York State. At the lower end of Beebe Lake is a beautiful gorge with a 150 foot falls. Within 15 minute walking distance is the Herbert Johnson Museum of Art. The building was designed by I.M.Pei and houses a collection specializing in Asian art, graphic arts and American art. These are a worthwhile visits during your stay.

Beautiful hiking trails and waterfalls are located within a 20 minute drive of Ithaca. Stewart Park is a beautiful picnic area on the lake. Buttermilk Falls, Treman Park and Taughannock Falls have spectacular hiking areas with waterfalls.



McGraw Tower on the Cornell Campus

The Corning Museum of Glass and Steuben Factory are located about 30 minutes south of Ithaca. There is a factory outlet and fascinating ancient and modern glass collection.

On July 20-23 the Fingerlakes Grassroots Festival of Music and Dance will take place in Trumansburg, a 25 minute drive up the west side of Cayuga Lake. For tickets and information write to P.O. Box 941, Trumansburg, NY 14886 (607-387-5098). Weekend tickets will cost \$27.50 (prior to May 1), \$35 (prior to July 18) and \$45 at the gate.

For additional information concerning the vast array of tourist attractions and events in the Ithaca area contact or call the Tompkins County Chamber of Commerce at (800) 284-8422 at 904 East Shore Drive, Ithaca, NY 14850.

**Athletic Facilities:** The Cornell University athletic facilities will be available to the conference registrants. Swimming (indoors), squash, tennis, nautilus, weight room, golf and bowling are available. There will be a nominal fee for all activities except tennis. There is

great swimming, boating and fishing in Cayuga Lake and its tributaries.

**Weather and Dress:** The weather in Ithaca will typically be in the upper 70s and 80s (25 - 30°C). Casual dress will be in order. The banquet will be a clam bake - so dress casually. Bring a raincoat/umbrella (just in case). The Wednesday outing will be on the lake so bring a sweater or wind breaker.

**Travel Information:** Ithaca has a new airline terminal which opened in the spring of 1995. It is serviced by U.S. Air and Continental Express Airlines. A shuttle service from the airport to the Robert Purcell Center (housing and registration center) at Cornell will cost approximately \$8.00 one-way. Additional air service is available at the Syracuse airport which is approximately one hour and fifteen minutes by car from Ithaca. Limousine service is available from the Airline Limo Service and will cost approximately \$65 roundtrip. You must make reservations by calling (800) 273-9197.

An Ithaca area and campus map will be sent with your registration materials.

#### Contact People:

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## INVERTEBRATE PATHOLOGY IN ITHACA, NEW YORK

As most SIP members already know, there is a large concentration of invertebrate pathologists in Ithaca, New York. Research, teaching, and service work in invertebrate pathology are conducted under the auspices of three organizations -- Boyce Thompson Institute for Plant Research, Cornell University, and the USDA Agricultural Research Service. Cornell's program also includes researchers based at the New York Agriculture Experiment Station in Geneva, New York, about 40 miles north of Ithaca. During the upcoming annual meeting, we hope you have time to become better acquainted with the wide variety of projects underway. Please contact individual investigators if you wish to visit any laboratories. Here are highlights of current personnel and projects.

#### Boyce Thompson Institute

The laboratory of **Bob Granados** is conducting research in the molecular basis of baculovirus pathogenesis. In particular they are cloning several enhancin genes from granulosis viruses and determining their molecular and biological properties. To improve the insecticidal activity of baculoviruses, they are constructing recombinant viruses which contain the enhancin genes. A second major project is the development of high-yielding insect cell lines for the production of baculovirus biopesticides. Several new cell lines from lepidopterous species have been developed that are excellent producers of recombinant proteins and baculoviruses. Personnel include **Leslie Lepore** (Post Doc), **Casey M. Finnerty** (Post Doc), **Ping Wang** (Graduate Student), **Kevin McKenna** (Research Specialist), and **Caroline Groenendijk** (Research Assistant)

The laboratory of **H. Alan Wood** conducts research on baculovirology, including projects on both recombinant and wild-type viruses. **Tom Davis** (Research Associate) and **Xinpei Wang** (Post Doc) are involved in a project to determine the host range of baculoviruses. Seven recombinant viruses expressing three different reporter genes are being used to detect early and late virus replication events in beneficial and pest insect species. **Peter Kulakosky** (Post Doc) is

involved on studies concerning post-translational modifications of foreign genes produced in the baculovirus expression vector system. The project is currently assessing the nature of the glycoproteins produced in different insect cells grown under different culture conditions and in different media. The group has also been involved in developing and field-testing strategies to ensure the ecological safety of genetically enhanced viral insecticides. Five field release studies have been conducted to date.

The laboratory of **Pat Hughes** focuses on quantitatively analyzing the processes of viral infection and disease progression and the application of this information to elucidating the basic biology of the host/virus interaction and how to use the viruses most effectively as pesticides. As integral parts of this effort, he is examining within-population variation in host susceptibility and studying the possible development of resistance to wild-type and recombinant viruses. In addition, methods and processes to maximize efficiency of in vivo production of the viral pesticides are being developed and assessed, and he is working collaboratively with Al Wood to study viral host range.

The laboratory of **Gary Blissard** is studying the cell and molecular biology of baculoviruses, with an emphasis on mechanisms of baculovirus entry and gene expression. **Scott Monsma** (Research Associate) and **Tom Oomens** (Research Assistant) have examined the structure, function, biosynthesis, processing, and oligomerization of the major envelope glycoprotein, known as GP64. Recombinant viruses, monoclonal antibodies, and stably-transfected cell lines expressing GP64 are currently being used to study the function of this important protein. **David Garrity** (Post Doc), **Jeffrey Slack** (Graduate Student), and **Min-Ju Chang** (Graduate Student) are examining various aspects of the regulation of baculovirus gene expression. These studies focus on both transcriptional and translational regulation and many studies involve mutagenesis and functional assays to identify regulatory sequence elements and binding sites for regulatory proteins.

**Donald W. Roberts** is currently involved primarily with entomopathogenic fungi. Areas of interest include the host-invasion processes, molecular characterization of strains and species, toxins, environmental fate, and

use of fungi and other pathogens for control of pest insects nationally and internationally.

The overall research program of **Raymond St. Leger**, with Post Doc **Lokesh Joshi**, has been directed towards elucidation of the processes by which entomopathogenic fungi, particularly *Metarhizium anisopliae* and other deuteromycetes infect an insect host. The information gathered is providing a knowledge base for a rational approach for fungal strain improvement through genetic manipulation. A major thrust of the laboratory is the development of a bank of cloned pathogen genes, each of which controls a different pathogenicity or virulence trait. Selections from among these genes can create novel combinations of insect specificity when expressed in other fungi or bacterial or viral species.

#### Steinhaus reprint collection

E.A. Steinhaus, a pioneer in invertebrate pathology, amassed a collection of over 15,000 scientific reprints and reports during his career. Through the auspices of his wife, Mabry, this collection was transferred to Boyce Thompson Institute several years after Dr. Steinhaus' death. The collection is currently housed in a fourth-floor conference room. It is indexed by first author, and the reprints are filed by accession number based only on sequence of acquisition. The collection covers the earliest days of invertebrate pathology through 1971. It is available to all interested scientists.

#### Cornell University

The laboratory of **Ann Hajek** is working with the epizootiology of entomophthoralean diseases of insects, with primary focus on *Entomophaga maimaiga* infecting gypsy moth. Studies include empirical and experimental investigations of components of the disease cycle to understand development of epizootics. Another major focus is host specificity, including experimental assays to define host range. **Michael J. Bidochka**, Post Doc, is investigating the question of host specificity in *Entomophaga maimaiga* and *E. aulicae* and its relation to immune responses in permissive and non-permissive hosts. Bidochka's other research interests include population structure and molecular ecology of entomopathogenic fungi, and

mechanisms of fungal pathogenesis. Some of his recent research (at Boyce Thompson Institute) focused on the use of molecular probes for differentiating pathotypes within the *Entomophaga grylli* complex and species of deuteromycetes.

The Cornell Veterinary Entomology Program is under the direction of **Don Rutz** with Research Associate **Wes Watson** and Graduate Student **Stefan Long**. The primary focus of the group is the control of arthropod pests of livestock and poultry. Research efforts are directed toward the development and use of entomopathogenic fungi *Beauveria bassiana* and *Entomophthora muscae* as biological control agents of house flies and stable flies. Other studies focus on the biology of a recently discovered pathogen of fly parasitoids, *Nosema muscidifuracis*, and other Microsporidia.

**Elson Shields** studies the biological control of alfalfa snout beetle, *Otiorrhynchus ligustici* with the entomopathogenic nematode, *Heterorhabditis bacteriophora*. The northern New York strain "Oswego" is adapted to persist in the soil throughout the severe winter conditions. After reintroduction into field plots in 1991, this strain has persisted for > 40 months. To date, excellent control has been achieved in small field plots.

Also, in the Department of Entomology, graduate student **Sarah Vance**, studying under **Bobbi Peckarsky**, is completing a Ph.D. thesis on mermithids parasitizing mayflies and mosquitoes. Graduate student **Kirsten Hural**, working under **Sarah Via**, is completing a Ph.D. thesis on variability in pathogenicity and susceptibility in an entomophthoralean/aphid system. Professors **Mike Hoffmann**, **Paula Davis**, **Rick Roush**, and **Ward Tingey** have also been involved with research projects using pathogens for insect control.

**Tony Shelton** and Support Scientist **Juliet Tang** are based in Geneva, New York, and study the management, spore-toxin interaction, molecular biology and genetics of *Bacillus thuringiensis* in the diamondback moth. Shelton has also been actively involved with Alan Wood (Boyce Thompson Institute) in field testing recombinant baculoviruses against

lepidopteran larvae. Recently he has collaborated with John Vandenberg (USDA ARS) on testing fungi for control of the diamondback moth and the cabbage maggot.

**Mike Villani** is also based in Geneva, New York. He investigates management and control options for white grubs, primarily as pests in turf grass systems. He has tested fungi, bacteria and nematodes for grub control and has demonstrated their effects on grub behavior within the soil.

#### USDA Agricultural Research Service

The USDA ARS Collection of Entomopathogenic Fungal Cultures, curated by **Richard Humber**, is now approaching 5000 accessions of more than 300 fungal taxa from nearly 900 different invertebrate hosts and all parts of the world. This culture collection is the largest and most diverse of its sort worldwide. Associated activities include research on classical and molecular approaches to the systematics and taxonomy of fungal entomopathogens (most recent efforts focus on *Verticillium lecanii* and other hyphomycetes) and by Graduate Student **Kathie Hodge** on morphological and molecular aspects of *Hirsutella*.

Ecologist **Alan Sawyer** and Support Scientist **Mike Griggs** study the population ecology and epizootiology of fungal entomopathogens, with the goal of integrating fungal biological control agents into insect pest management programs. They are currently focusing on *Zoophthora radicans* as a pathogen of the potato leafhopper.

**John Vandenberg** studies and develops entomopathogenic fungi as biocontrol agents of pest insects of agricultural crops. Current target fungi and pests include *Beauveria bassiana* and *Paecilomyces fumosoroseus* against the Russian wheat aphid and the diamondback moth. Support Scientist **Mark Ramos** coordinates field, greenhouse, and laboratory assays against these pests. Post Doc **Frank Cantone** studies the biology and genetics of *P. fumosoroseus* and determines the bases of fungal virulence and Graduate Student **Jennifer Altre** studies details of the infection process of these fungi in these pests.

Fungal pathogens of invertebrates represent a relatively untapped source of novel, biologically active compounds having useful biopesticidal properties. **Donna M. Gibson**, along with **Stuart B. Krasnoff** (Post Doc) and **Lyn Greenspan Gallo** (Support Scientist), have been screening fungi from the USDA ARS Collection of Entomopathogenic Fungi for the past 4 years and have added several compounds to the list of characterized active metabolites known to be produced by these fungi. This research holds promise for the discovery of novel natural products which may have high target selectivity.

**Patricia Timper** works as a Post Doc with **Bill Brodie** on management of the root-lesion nematode with the fungus *Hirsutella rhossiliensis*. She is currently examining the influence of the host plant on biological control of the nematode.

#### FROM THE PRESIDENT

During my first eight months as President of SIP, I have had informal conversations and occasional mail concerning the need for greater international diversity among our Society officers, and site selection procedures for our annual meetings. The issue regarding the international composition of the SIP was addressed by both our Newsletter editor, Mark Goettel, and by your past President, Chris Payne (newsletter, Vol. 26, No. 3).

The question of greater international diversity of membership participation in SIP business and activities is very important. We are indeed an international society; for future growth and success, SIP must continue to have world-wide representation at all levels - including election to Society office, service on committees, and holding some annual meetings in venues outside North America. I am currently assembling a Nominating Committee entrusted with the task of nominating candidates willing to stand for election to SIP office. I will ask the chair of this committee to identify a slate of nominees that reflects international representation and presents the membership with the best possible candidates who will provide the strong leadership your Society deserves. The nominating committee will present its

recommendations at our July annual meeting in Ithaca. During my comments in the opening session, I will identify the members of this committee, and I encourage you to contact any of these individuals and provide them with names of persons who you feel may be excellent nominees for office. In making their recommendations, the nominating committee will consider many factors including professional experience, prior service and experience in Society activities, ability to make substantial time commitment to the elected office, disciplinary affiliation, ability to attend annual meetings, etc.

The various SIP committees (see Supplement 2 in this Newsletter) are almost complete, and I have done my best to appoint individuals who expressed a willingness to serve the Society in any capacity. Again, it is important that you write or contact myself or Brian Federici, your incoming President in 1996, and express your desire to participate in SIP activities.

In recent years the sites of our annual meetings have truly reflected the international nature of our Society. For many years SIP was considered a "North American" Society, with the United States playing a major role in providing many officers as well as sites for most of our annual meetings. For a young society that had mostly North American scientists on its membership rolls, this was appropriate. However, our Society has now grown into a mature organization with considerable membership beyond North America. In keeping with the wise SIP council decision to hold more of our annual meetings outside of the United States, we have held meetings in Heidelberg, Germany (1992), and will hold the 1996 and 1997 annual meeting in Cordoba, Spain and Banff, Canada, respectively. In recent years we have also held Invertebrate Pathology Colloquia in Adelaide, Australia (1990), and Montpellier, France (1994). Our next colloquium will convene in Sapporo, Japan in 1998. Clearly, we are serving our international membership by selecting meeting sites throughout the world.

The Society solicits invitations from any individual(s) or organizations that wish to host the annual meeting in their country. The meeting board reviews the invitations and makes recommendations to the SIP council for future meeting sites. Some of the criteria

for selection of the meeting site include: availability of conference facilities, projected costs for registration and accommodations, ease of travel to the conference site, experience and local support for the individual(s) who wish to organize the meeting, etc. Consequently, if you feel strongly about organizing an SIP meeting you should contact our meeting board chairman, Just Vlak, or any member of his committee. We are looking for meeting sites for 1999 and beyond.

As I prepare this letter, final preparations are underway by members of the local and program committees to assure that the 1995 SIP meeting in Ithaca, NY will be as successful as the one we hosted in 1983. Numerous persons on both of these committees have contributed significantly by organizing a strong scientific program and procuring the necessary facilities to make this an enjoyable experience for everyone. We look forward to seeing many of you at this meeting.

Bob Granados

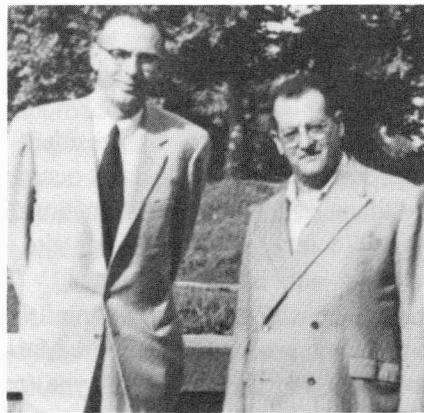
#### HONORARY MEMBERS OF THE SOCIETY FOR INVERTEBRATE PATHOLOGY

*What is an Honorary Member of the Society for Invertebrate Pathology?*

At the last election (1994), we elected three Honorary Members to our Society. However, many members may not understand the significance of this honor, and may be confused about the distinction between an Honorary Member, an Emeritus Member, and the distinguished scientists honored by the Founder's Lecture each year. Therefore we have contacted our living Honorary Members for information on their professional and personal lives, their involvement with SIP, and their memories about the Society and our profession. This is the first of a series of articles on our Honorary Members. We hope that this bit of history will allow our current members to see the flow of ideas, lively intellect, and excitement which has characterized invertebrate pathology since its founding. The impact of these scientists on our field has been enormous, and is continuing to the present day.

The SIP By-Laws state: "A person who has made superior contributions to invertebrate pathology, or who has served the Society long and with distinction, shall be eligible for nomination as an Honorary Member. Not more than three Honorary Members may be elected during any one year. Honorary membership is the highest recognition the Society can confer". During the 27 years since the founding of SIP, we have elected only 15 persons to this high honor. Of these, 10 are still living, and have generously provided materials for this article. Information on deceased Honorary Members has been obtained from Newsletters and other articles, and from colleagues. It is appropriate to begin our story with the first Honorary Member.

#### ENRICO MASERA.



Professor Enrico Masera (right) with Professor Edward Steinhaus, September, 1954, in Padova, Italy. Photo by Mauro Martignoni.

Enrico Masera was born on December 2, 1902, in Fondo, Northern Italy. In 1928 the University of Padova awarded him the Doctoral Degree in the natural sciences, with the highest possible grades. In 1933, after three years of postdoctoral experience, he won the position of staff research scientist at the Sericulture Experiment Station in Padova where, with the exception of the war years, he remained throughout his career. He also taught sericulture and apiculture as Professor at the University of Padova. He retired in 1967 as the Director of the Experiment Station.

Professor Masera was author of over 200 scientific publications, covering pathology of the silkworm and of other insects, with special emphasis on mycoses, pebrine and flacheries, and silkworm physiology, with emphasis on the study of the dorsal vessel, digestive system and cocoon formation. He also investigated the economic aspects of sericulture as well as the history of the evolution of sericulture in Italy and throughout the world. On the basis of Masera's careful analysis, the flacherie complex of silkworm was subdivided into a number of distinct morbid entities with characteristic syndromes. He was also the author of the first treatise in insect pathology in Italian (*Le Malattie Infettive degli Insetti*, 1936), which contained the most complete bibliography of insect pathology up to 1936.

Dr. Masera was unanimously elected to Honorary Membership in 1968, during the first general election of the Society for Invertebrate Pathology. In his letter of congratulations, President Edward Steinhaus stated, "Ordinarily it would be appropriate for me to congratulate you upon having been elected to this Honorary Membership. However, in this case, I feel that it is the Society that should be congratulated upon having chosen to elect you as their first Honorary Member". Dr. Mauro Martignoni, who has kindly provided us with much information concerning Dr. Masera, has suggested that Steinhaus and Masera were perhaps the last two scientists who had a comprehensive grasp of all areas of insect pathology. Dr. Masera died in Padova, Italy, on July 4, 1977.

#### MABRY CLARK STEINHAUS.



Mabry Clark was born in Mize, Mississippi, in 1914. Her family moved to Starkville, Mississippi, in order that their children could afford to attend college during the Great Depression. Mabry entered Mississippi State University in 1932, and worked in the Bacteriology Department for three years during her undergraduate program. She then entered graduate school at Ohio State University in Columbus, Ohio, where she earned a Master of Science degree, taught bacteriology at Mississippi State during the summers, and after graduation was employed at North Dakota State University, again teaching bacteriology. During her graduate studies at Ohio State, she met Edward Arthur Steinhaus, and they were married in 1940. Mabry describes herself as her husband's "Lady Friday", in which capacity she was present at the conception, gestation and birth of insect pathology. Although she was never paid for her efforts, she was certainly a partner in much of the early development of our field.

When Ed and Mabry lived in Hamilton, Montana from 1940-44 (where Ed was employed by the U.S. Public Health Service Rocky Mountain Spotted Fever Laboratory), they diligently searched hundreds of volumes of scientific literature for any reference to any kind of disease of an insect. Steinhaus' first book, "*Insect Microbiology*", was the result. In 1944, Ed Steinhaus accepted a position at the University of California at Berkeley, where, in 1946, he received permission to set up the first laboratory of insect pathology.

Mabry describes this first insect pathology laboratory as "a filthy place-- an old graduate student laboratory. There was one large room with a 6 ft by 6 ft cubical walled off for an office. After scrubbing away years of entomology student leavings, the laboratory was equipped with one autoclave, one microscope, a gas oven and a small portable incubator". Out of this pioneering laboratory came many discoveries on a wide range of invertebrate pathogens, the influential books "*Principles of Insect Pathology*" and "*Insect Pathology, an Advanced Treatise*", and the founding of the Annual Review of Entomology and the Journal of Insect (later Invertebrate) Pathology. However its most important product was its students and collaborators, which included Ken Hughes, C.G. (Hank) Thompson, Salah Abul-Nasr, Irvin M. Hall, Karl Snyder, John Briggs,

Mauro Martignoni, Edwin Clark, Yoshinori Tanada, Sothorn Prasertphon, Wayne Brooks, Don Roberts, R. Sluss, George Thomas, Leo Van der Geest, Martin Shapiro, L. Etzel, Bernado Gabriel, and Ron Goodwin. Mabry describes those years at Berkeley, "those were exciting and fun years- so full of new discoveries and the development of the field of insect/invertebrate pathology".

Mabry continued to assist her husband with his writing and research after he moved to the University of California at Irvine in 1963 to establish an innovative School of Biological Sciences and the field of Pathobiology at the new campus. Ed Steinhaus died suddenly in 1969. He had been working on a history of invertebrate pathology, entitled "*Disease in a Minor Chord*", which Mabry completed after his death.

Mabry continued for many years working with fund raising at the UC Irvine campus, where she served as president of the UC Irvine Foundation and the University Interfaith Foundation, and has been honored by the University many times, including the alumni organization's highest honor and the Chancellor's award. She was elected an Honorary Member of SIP in 1980. She now lives in Irvine where she is still active on the UC campus, and enjoys her three children and five grandchildren. This history has been provided by Mrs. Steinhaus, with the assistance of her daughter, Peggy Goetz.

#### KEIO AIZAWA



Professor Keio Aizawa was born in 1927, and received both undergraduate and PhD degrees from the

University of Tokyo. He held posts as Silkworm Pathologist and Chief of the Virus Laboratory at the Sericulture Experiment Station, and then became Professor of Insect Pathology at Kyushu University, where he became Director of the Institute of Biological Control. After his retirement, he was appointed Professor Emeritus at Kyushu University, and currently holds the post of Professor at Teikyo University.

Based on his early work on nuclear polyhedrosis virus of silkworm, disinfection techniques were developed which have led to greatly reduced incidence of viral diseases in silkworm rearing facilities in Japan.

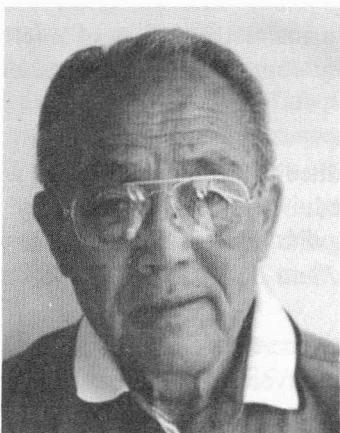
Professor Aizawa is best known, however, for his lifelong efforts in development of *Bacillus thuringiensis* as a microbial insecticide in Japan. Because *B. thuringiensis* is highly toxic to the silkworm, preparations of this organism were forbidden to be imported into Japan. His laboratory investigated differences in susceptibility of silkworm strains, differences in toxicity of *B. thuringiensis* strains to the silkworm, development of resistance in the silkworm by exposure to sublethal doses of *B. thuringiensis*, and multiplication of *B. thuringiensis* in dead silkworms and litter. These investigations eventually led to the exemption of importation of foreign *B. thuringiensis* preparations in 1971. Professor Aizawa states with great pleasure that finally a native spore-killed preparation was registered in Japan in 1981 and a foreign living spore-crystal mixture in 1982.

*Bacillus moritai*, a bacterium with efficacy for the control of the house fly in laboratory and field conditions, was isolated in Professor Aizawa's laboratory. Vertebrate safety tests were performed, and finally Professor Aizawa himself was a volunteer, ingesting *B. moritai* preparations in 1970. Although it is not presently in use, the preparation was eventually registered in Japan as a feed additive for animal feeds and as an insecticide of medically important insects.

Professor Aizawa has also been active in training courses on microbial control and microbial insecticides for scientists from South and East Asian countries, and has organized sections on insect pathology and microbial control at nine international meetings. He

has served SIP as Trustee, and has served on numerous committees, panels and editorial boards, including the Journal of Invertebrate Pathology. He has received many awards, including the Prize of the Japanese Society of Agricultural Sciences, the Louis Pasteur Prize, and the Sericultural Science Prize. He was elected to Honorary Membership by the Society for Invertebrate Pathology in 1992. Professor Aizawa remains active, teaching microbiology, agricultural biology, and insect pathology at Teikyo University, and is currently preparing articles on the history of silkworm pathology and microbial control in Japan.

#### **YOSHINORI TANADA**



Professor Yoshinori Tanada was born in 1917 in Honolulu, Hawaii. He obtained the Bachelor's and Master's degrees from the University of Hawaii, and was awarded the PhD degree from the University of California at Berkeley in 1953. Professor Tanada began his professional career at the University of Hawaii, but later joined the faculty of the University of California at Berkeley in 1956. He became Chair of the Division of Invertebrate Pathology at Berkeley in 1965, and retired as Professor Emeritus in 1987.

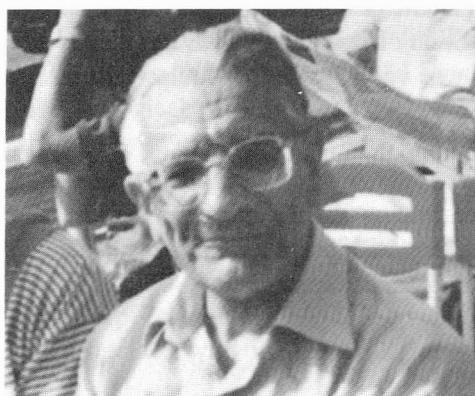
Professor Tanada's research career has centered around the pathogenicity and interactions of insect viruses and with epizootiology, as well as occasional studies on *B. thuringiensis*, fungi, and microbial control. Professor Tanada (or Joe, as he is known to his friends), elucidated the basis, mode of action, and identification of viral enhancing factor, while studying the synergistic interaction of insect viruses. He has

also studied the persistence of viruses in insect populations and insect habitats, and was involved in the demonstration that pathogens are effective on insect pests of low economic threshold. Professor Tanada is author of 177 papers, and has edited three books, "The Cytoplasmic Polyhedrosis Virus of the Silkworm" (1971, with H. Aruga), "Epizootiology of Insect Diseases" (1987, with J.R. Fuxa), and "Insect Pathology" (1993, with H.K. Kaya).

Professor Tanada has received a Fulbright Fellowship for study at the University of Tokyo, an AAAS Fellowship, a Senior Scientist Visiting Professorship from the Japan Society for Promotion of Science, and a Japanese Government research award. He has served SIP as both Treasurer and Trustee. He has served as acting editor of the Journal of Invertebrate Pathology, and on the editorial board of this journal for a total of 10 years. He was honored as the Society for Invertebrate Pathology Founder's Lecturer in 1984, and was elected Honorary Member of the Society in 1988.

Professor Tanada shares memories of the founding of SIP, when he met with Ed Steinhaus and Mauro Martignoni, laying the groundwork for the Society. He recalls the excitement of the first meeting at Ohio State University in 1968. He also recalls the hospitality and success of the meeting in Prague, Czechoslovakia, in 1978, even under the severe privations of the times. Joe and his wife, Edna, are enjoying retirement, travelling and gardening, where he raises orchids and fish. He also remains professionally active, spending about one day a week on the Berkeley campus.

#### **HORACE DENIS BURGES**



Denis Burges was born in 1927, and received the Bachelor's and PhD Degrees from London University. He spent a year studying at the University of California at Berkeley, and was awarded the DSc degree in Entomology and Insect Pathology from London University in 1982.

Dr. Burges began his professional career at the Pest Infestation Control Laboratory at Slough, UK, and then moved to the Glasshouse Crops Research Institute in Littlehampton in 1970. At the GCRI, he was Principal Scientific Officer (1970-1987) and Head of the Insect Pathology Section from 1984 to 1987.

During his career at the Pest Infestation Control Laboratory in Slough, Dr. Burges was engaged in studies of insects affecting stored grain, and designed methods for enhancing storage of grain.

Invertebrate pathologists will remember Dr. Burges best, however, for the work which began in 1961 with studies of *B. thuringiensis* in stored products insects. He was one of the first to demonstrate the dosage-mortality relationship using probit analysis. During this period, Dr. Burges recognised the unsatisfactory nature of standardization of *B. thuringiensis* products based on spore count, long before the multiplicity of *B. thuringiensis* toxins and strains was well understood. During his year at Berkeley, he trained himself as a microbiologist, and during visits to scientists in North America, began to organize the international program in which laboratories worldwide independently bioassayed three candidate reference powders. This culminated in the acceptance of the first *B. thuringiensis* international reference standard, based on strain E61. The E61 standard was later suspended when the 3a3b *kurstaki* strain was adopted. Later, Dr. Howard Dulmage directed an international program for investigation of *B. thuringiensis* strains, in which Dr. Burges was very active, particularly in assays of the wax moth, *Galleria mellonella*.

Dr. Burges' personal research on the wax moth led to the understanding that the spore, as well as the crystal, of *B. thuringiensis* plays a major role in the pathology in this insect and others.

The Glasshouse Crops Research Institute at Littlehampton concentrated much of the work on biological control in the UK at one site. Among the programs during that period was the development of *Verticillium lecanii* as a commercial product (with Richard Hall), genetic alteration of *B. thuringiensis* strains (with Paul Jarrett), and the ecology of *B. thuringiensis* in soil (with Andrew West).

Dr. Burges served the World Health Organization Special Programme for Research and Training in Tropical Diseases as member and chair of the Research Group on Biological Control of Vectors and numerous other WHO committees, particularly during the development of *B. thuringiensis* subsp. *israelensis* (H14) as a vector control agent. He has also maintained an interest in safety of microbial agents, chairing safety committees for several organizations, including SIP.

Dr. Burges edited two influential books which are still widely quoted: "*Microbial Control of Insects and Mites*" (1971, with N. Hussey), and "*Microbial Control of Pests and Plant Diseases, 1970-1980*" (1981).

Dr. Burges is a charter member of SIP. He has served the Society on several committees, as Trustee, and as Vice President and President. With Chris Payne, he helped organize the International Colloquium at Brighton in 1982. He was the UK dues collector, and is an active member of both Microbial Control and Microsporidia Divisions. He was elected to Honorary Membership in 1994.

Dr. Burges describes SIP meetings as "a happy family atmosphere. These were meetings of friends, where news was exchanged and new plans hatched." He also recalls "those delightful few minutes with that charming young lady on the centre of the banquet floor at Sault Ste Marie"; (if you were not present at that meeting, you will have to ask someone who was!). Since retirement, Dr. Burges has acted as a consultant, and is editing and writing an in-depth book on formulation of insect pathogens, nematodes, microbial agents for control of plant pathogens and weeds, and the use of beneficial microorganisms in soil and on seeds.

The second installment of our story on Honorary Members will appear in the next Newsletter.

Elizabeth W. Davidson,  
Assistant Editor.

## MICROBIAL CONTROL NEWS

### Mycotech Receives EPA Registration of *Beauveria bassiana* Products

Mycotech Corporation, Butte, MT has received registration from the US Environmental Protection Agency for its first two biopesticides. Both are based on *Beauveria bassiana*. Mycotrol® GH is registered for control of grasshoppers, locusts, and Mormon crickets in rangeland, improved pasture, and several field crops. It is formulated as an oil flowable for ULV application and as an emulsifiable suspension for LV application. Mycotrol WP is a wettable powder formulation registered for use on whiteflies, aphids, thrips, psyllids, mealybugs, and plant hoppers in field and greenhouse crops, ornamentals, turf, and forestry.

These are the first US registrations of *B. bassiana*. They were given priority by EPA because of its creation of a pilot division for reduced risk biological pesticides and because of a US Department of Agriculture/EPA program for expediting priority registrations. The registrations are the result of broad collaborative efforts. For the past several years, the US Department of Agriculture has cooperated with Mycotech in its development of Mycotrol WP for whiteflies, chiefly through the Agricultural Research Service in Arizona, California, and Texas. The Animal and Plant Health Inspection Service of the USDA and Agriculture and Agri-Food Canada both collaborated in the development of Mycotrol® GH.

In 1994 field tests, Mycotrol® WP gave as high as 90% control of whiteflies and significantly increased yield of cucumbers and melons. This year, Mycotech is conducting large scale field trials of Mycotrol® WP in vegetable and cotton crops in Arizona, California, Florida, Texas, and Mexico. These trials will concentrate on whiteflies, the cause of \$320 million of crop damage in California's Imperial Valley alone.

Trials of Mycotrol® GH for grasshoppers on rangeland are planned for Oregon and Canada. A significant component of this years trials will be the evaluation of effects on nontarget arthropods in the field. The company is also collaborating with several institutions in developing optimal use patterns in greenhouses for control of thrips and whiteflies.

The company expects to sell limited quantities of Mycotrol as early as September, 1995, with full scale production and marketing scheduled for the first quarter of 1996. In order to meet anticipated demand, production capacity will be scaled up from the present 300 lbs. of spores/month to 21,000 lbs./month. The company expects to begin building a 16,000 sq. ft. manufacturing plant in July of this year. Marketing and distribution agreements are currently being negotiated.

Mycotech Corporation was founded in 1990 to develop fungal technology for bioremediation of contaminated soils as well as for biopesticides and currently has 22 employees. It has received funding from the Montana Science and Technology Alliance, as well as several venture capital companies.

Jeff Lord  
Mycotech Corporation  
630 S. Utah Ave.  
Butte, MT 59702 USA  
Tel: (406) 723-7770  
Fax: (406) 723-8007

### EPA'S New Pesticide Division Registers *Beauveria Bassiana* Strain GHA, Biological Pesticide to Control Silverleaf Whitefly

**April 3, 1995** EPA has registered another biological pesticide, *Beauveria bassiana* strain GHA (trade name Mycotrol Biological Insecticide) to control the silverleaf whitefly on vegetable crops and cotton. This pest has caused annual crop losses of over \$200 million in the Southwest and Florida since 1991 and has developed resistance to many of the conventional pesticides registered for its control. The registrant, Mycotech Corp. of Butte, Mont., developed this biological pesticides with the Agricultural Research

Service of the U.S. Department of Agriculture (USDA) under a cooperative research and development program. The new biological pesticide has performed well in small-plot field trials in Texas and Arizona and has potential to be used as an alternative to conventional pesticides to which the whitefly has become resistant, and for use in integrated pest management (IPM) programs. Mycotrol Biological Insecticide consists of fungal spores which invade the whitefly's skin or cuticle and feed on its body. Earlier this month, under the trade names Mycotrol GH-OF and Mycotrol GH-ES, *Beauveria bassiana* Strain GHA was registered by Mycotech to control grasshoppers, locusts and Mormon crickets on rangeland, improved pastures, alfalfa, corn cotton, potatoes, rapeseed, safflower, small grain crops, soybeans, sugarbeets and sunflowers.

EPA was able to give priority to the registration of this biological for two reasons: 1) EPA's creation of a pilot division to focus on streamlined decision-making for getting reduced-risk biological pesticides into the marketplace; and 2), a USDA/EPA partnership program in which USDA identifies priority needs and provides reduced-risk pesticide research to EPA, and EPA in turn provides expedited registration of reduced-risk pesticides.

In November 1994, EPA created a pilot, multi-disciplined division to encourage the use of safer pesticides, accelerate registration of new biological pesticides and to reduce unnecessary pesticide use and risk. The Biopesticides and Pollution Prevention Division differs from other pesticide divisions in that scientists who conduct risk assessments work side by side with regulators managing the registration process. This approach is expected to streamline and accelerate the process of getting safer pesticides into the marketplace.

The new division, together with EPA's Biological and Economic Analysis Division, lead the Agency's efforts to implement the Pesticide Environmental Stewardship Program. This is a voluntary program in which grower groups and other pesticide user groups are participating to reduce risks associated with pesticide use.

Other biological pesticides registered by the new division are:

\* *Bacillus thuringiensis* subspecies kurstaki strain EG7673 (trade name RAVEN), registered by Ecogen Inc. of Langhorne, Pa. for control of the Colorado potato beetle on potatoes, tomatoes and eggplant.

\* *Candida oleophila* isolate 1-182 yeast cells (trade names 1-182 Technical Powder Biofungicide and 1-182 Biofungicide), registered by Ecogen Inc. of Langhorne, Pa. for use as a post-harvest control of certain decay-causing pathogens of citrus and pome fruits.

\* (E)-5-Decenyl Acetate, (E)-5-Decenol, Peach Twig Borer Pheromone (trade name Checkmate PTB), registered by Consep Inc. of Bend, Ore. for end-use and manufacturing-use on peaches, nectarines, apricots, plums, prunes, cherries and other stone fruits; almonds and other tree nut crops; and any other crops where the peach twig borer is a problem.

\* *Pseudomonas syringae*, strain ESC-10 and *Pseudomonas syringae*, strain ESC-11 (trade names Bio-Save 10 Biological Fungicide and Bio-Save 11 Biological Fungicide) registered by EcoScience Corp. of Worcester, Mass., for use in or on pears, apples, lemons, oranges and grapefruit as a post harvest treatment to control fruit rot caused during storage by *Penicillium expansum*, *Botrytis cinerea*, *Mucor piriformis*, *Penicillium italicum*, *Penicillium digitatum*, and *Geotrichum candidum*

Al Heier  
United States  
Environmental Protection Agency  
Communications, Education and Public Affairs  
Tel: (202) 260-4374

#### **Mycogen Receives EPA Approval to Produce Seeds for Genetically Engineered Insect-Resistant Corn Hybrids**

San Diego, Calif. March 21, 1995 Mycogen Corporation has received Environmental Protection Agency (EPA) approval to produce planting seeds for corn hybrids that are genetically engineered to resist insect damage.

The new hybrids produce a protein that protects them from European corn borers, a pest that costs U.S. farmers as much as \$1 billion a year in lost yields. This protection will reduce or eliminate the need for conventional corn borer insecticide applications, which are expensive and often can't control corn borers after they tunnel into cornstalks.

The gene responsible for corn borer resistance is a synthetic copy of those produced by *Bacillus thuringiensis* (B.t.). According to Dr. Albert D. Kern, Mycogen's executive vice president - commercial development, the EPA registration will allow the company to produce both foundation seed used to produce hybrid plants and hybrid seeds at designated locations in six states and Puerto Rico.

"This keeps us on schedule to introduce transgenic hybrid seed corn with built-in resistance to corn borers hybrids next year," Kern said. "Approval to sell these seeds commercially still is pending, but we can now scale up production in anticipation that approval for commercial sale will be granted in time for the 1996 growing season."

Mycogen already has introduced corn hybrids with genetically enhanced natural resistance to the first generation of corn borers, which strike corn plants early in the season. Bt-based resistance will provide a second control mechanism and one that will protect corn plants throughout the season against both the first and second generations of the pest. Because Mycogen's natural first brood-resistance is derived from genes native to the corn plant and the hybrids are produced through traditional breeding, EPA approval is not required, so the company sold them for planting on more than 100,000 acres this year.

Mycogen field-tested the transgenic hybrids last year under an EPA Experimental Use Permit. Kern said the company ultimately plans to market seeds containing both natural and Bt-based control genes to reduce the likelihood that the pests might overcome a single control mechanism. "Corn is America's largest crop, so these new crop protection technologies will produce tremendous economic and environmental benefits," Kern said. "Seed corn with built-in insect resistance will give farmers higher yields without the expense and

environmental side-effect of chemical insecticides. We think these new products will capture an increasing share of the \$1.5 billion annual U.S. seed corn market."

Michael Sund, Director  
Corporate Communications  
Mycogen Corporation  
4980 Carroll Canyon Road  
San Diego, CA 92121  
Tel: (619) 453-8030  
FAX: (619) 453-5494

#### MEMBERS ON THE MOVE

**ELLEN BEERLING** has left the University of Amsterdam after 4 1/2 years of working on microsporidium infections in predatory mite mass rearings. As of February 1st she started working as a post-doc at the Floriculture Research Station with Dr. Joanne Fransen. For the next 3 years she will be working on the biological control of thrips and aphid pests of glasshouse ornamentals with entomopathogenic fungi (an EC-project). Her new address is:

Ellen A.M. Beerling  
Research Station for Floriculture  
Linnaeuslaan 2a  
1431 JV Aalsmeer  
the Netherlands  
tel: +31 2977 52447  
fax: +31 2977 52570  
E-mail: E.Beerling@PBN.AGRO.NL

**WENDY GELENTTER** has accepted a partnership role with PACE Consulting, an independent agricultural and environmental consulting and contract research firm located in San Diego, CA. PACE Consulting was established in 1986 to provide scientifically sound, applied solutions to crop management problems by integrating information on soil fertility, water management and pest control. PACE has taken a unique approach by developing research programs that involve its clients -- the end users-- in setting research priorities and implementing research studies on -site. For these efforts to link end-

users more effectively to IPM research programs, PACE recently received The IPM Innovators Award from the California EPA. Wendy currently serves on the SIP Executive Council as Secretary, and plans to remain active on the Council and in the Society's activities. She can be reached at :

PACE Consulting,  
1267 Diamond Street,  
San Diego, CA 92109  
Tel: (619) 272-9897  
Fax: (619) 483-6349  
E-mail: PACENET@DELPHI.COM

**SEN SELVAN** joined Ecogen Inc. as a research scientist to develop methods to assess nematode quality and shelf-life. His current address is:

Dr. Sen Selvan,  
Ecogen Inc.,  
2005 Cabot BLVD West,  
Langhorne, PA 19047.  
Tel: (215) 757- 1590,  
Fax: (215) 757- 2956  
E-mail: selvan@omni.voicenet.com.

## NEWS ITEMS

### News from Cyberspace

1. By simply sending the following message (in this format and without electronically-generated Signature) to <listserv@ftpt.br>, your name will be added to the list of recipients (244 for now, but only a few pathologists) of the interest group BIOCONTROL-L.
2. By sending a message to <nilce@cnpda.embrapa.anp> requesting the form on E-mail, your name will be added to the Data Base "WHO IS WHO IN RISK ASSESSMENT OF BIOCONTROL AGENTS". Its purpose is to know and to gather people working on this subject. Emphasis will be given to studies and tests related to ecotoxicology, epizootiology, ecology, biosafety legislation, and field release of control agents. About 300 people from the BIOCONTROL-L discussion list have already filled out the form and the information from them are already stored in the data base. The Data Base will be made

available to on-line access through the Internet in July 1995. You will be queried as to your main activities, research area, biocontrol agents, etc.

Tad Poprawski  
USDA - ARS  
Weslaco Texas

## PUBLICATIONS

**1. Catalogo Aislamientos de Organismos Entomopatogenos en Mexico.** 1994. Secretaria de Agricultura y Recursos Hidraulicos, Subsecretaria de Agricultura, Direccion General de Sanidad Vegetal, Direccion de Centros Nacionales de Referencia Fitosanitaria. Centro Nacional de Referencia de Control Biologico: Tecoman, Colima, Mexico. 18 pp. [listed are *Bacillus thuringiensis* isolates, fungi, nematodes, and viruses; short notes on the life cycle of these organisms are provided; addresses of the five locations storing the organisms are given in appendix].

**2. Memoria, Taller de Produccion Masiva de Hongos Entomopatogenos.** 1994. Secretaria de Agricultura y Recursos Hidraulicos, Subsecretaria de Agricultura, Direccion General de Sanidad Vegetal. Sociedad Mexicana de Control Biologico. 64 pp. + appendix (19 pp.). [Proceedings of a workshop held at Tecoman, Colima, Mexico, 21-23 September 1994. Several authors cover all aspects of the mass production of entomopathogenic fungi. The appendix (by Rich Humber) is a key to the genera of entomopathogenic fungi. All in all, a meritorious effort.]

**3. Balazy, S. 1993. Flora of Poland (Flora Polska). Fungi (Mycota), Vol. 24, Entomophthorales.** Polish Academy of Sciences, W. Szafer Institute of Botany, Krakow, Poland. 356 pp. [For the specialist. A fantastic treatment of entomopathogenic Entomophthorales, especially of the controversial genus *Zoophthora*. The English grammar is at times rickety (the book has been translated from the Polish language) and typos have been spotted; nevertheless it is a masterpiece, a must in the library of the serious "insect entomophthorologist".]

Tad Poprawski is willing to lend any of the above publications.

Tad Poprawski  
USDA-ARS  
Subtropical Agricultural Research Laboratory  
Biological Control of Pests Unit  
2413 East Highway 83  
Weslaco, Tx 78596, USA  
Tel: (210) 969-4873 (or -4852)  
Fax: (210) 969-4888  
E-mail: tadp@pop.tamu.edu

#### **Production and Application of *Bacillus thuringiensis* Preparations**

The book "Production and Applications of *Bacillus thuringiensis* Preparations" (1993, Agricultural Publishing House, Beijing, ISBN 7-109-03106/S.2000, 282p.) is another monograph edited by Prof. Ziniu Yu succeeding the book "*Bacillus thuringiensis*" (1990, Sciences Press, Beijing, ISBN 7-03-001580-0, 500p.). It was written in Chinese to bring together the basic knowledge of *Bacillus thuringiensis* (B.t.), common methods of industrialized production, and applied concepts of B.t. preparations.

The book consists of 11 chapters. The importance of B.t. in the control of insect pests and its development in China are presented in the first chapter. Chapter 2 covers morphological and cultural characters, classification and life cycle. Chapter 3 discusses isolation, selection and collection of B.t. strains. Chapter 1 deals with nutrition and metabolism of nitrogen source, carbohydrate and other substances. Chapters 5, 6 and 7 elaborate on submerged fermentation, semi-solid fermentation and control of contamination by bacteriophage. The fermentation procedures, cultural media using agricultural by-products and management of fermentation are discussed in detail. Chapter 8 is dedicated to the recovery and formulation of B.t. products, including the commonly used formulations in China. Chapter 9 explains B.t. toxins and mode of action. Chapter 10 is concerned with assay of toxicity and standardization of B.t. preparations, emphasizing the qualitative criterions and bioassay of B.t. products. Chapters 11 through 13 deal with utilization of B.t. against crop, forestry and

horticultural pests, and pests of storage and environmental sanitation, extending to application principles, methods and efficiency. The last chapter tackles safety and registration of B.t. products.

This book can serve as an aid to researchers, engineers, teachers and students engaging in B.t. research.

Each book sells for US\$ 18.00, Airmail : US\$2.00.  
Please send your payment to:

Ms. Xixia Luo  
Laboratory of Insecticidal Microbiology  
Department of Microbial Sciences and Technology  
Huazhong Agricultural University  
Wuhan, Hubei 130070  
P.R. China

**Abstracts and Proceedings from the VIth International Colloquium on Invertebrate Pathology and Microbial Control and the IIInd International Conference on *Bacillus thuringiensis*, Montpellier, France, 28 August - 2 September, 1994.**

The Abstracts and Proceedings are in 2 volumes; volume 1 contains the Proceedings (507 pages) and volume 2 contains the Abstracts (417 pages).

The Abstracts will be sent free of charge to members in good standing for 1994. However, there will be a processing, handling and mailing fee of \$U.S. 9.00 for mailing within North America and \$U.S. 13.00 for mailing overseas. Non-members can purchase the Abstracts for \$25 plus the appropriate processing, handling and mailing fee as outlined above.

The Proceedings can be purchased by members and nonmembers for \$25 plus the processing, handling and mailing fee. If both the Abstracts and Proceedings are requested, the processing, handling and mailing fee remains the same. Please refer to the table below for a synopsis of costs.

Checks and/or money order should be made out to the "Society for Invertebrate Pathology" in US currency. No credit cards will be accepted. Send request to FASEB, c/o Society for Invertebrate Pathology,

ATTN: Debbie Stoutamire, 9650 Rockville Pike, Bethesda, Maryland, 20814 USA.

**NOTE:** There are only 200 of each publication available and these will be distributed on a first come, first served basis.

	Member	Cost		
		Non-member	<u>Processing and Mailing</u>	N. America      Overseas
Abstracts	Free	\$25	\$9.00	\$13
Proceedings	\$25	\$25	\$9.00	\$13
Abs + Proc	\$25	\$50	\$9.00	\$13

**Note:** Due to an oversight, Dr. Lerry Lacey's name was omitted in the list of the Scientific Programme Committee published in the Proceedings. The Organizing Committee regrets this omission.

#### MEMBER NEWS

#### Eastern Branch of the Entomological Society of America Nominates our President, Bob Granados, for the CIBA-Geigy Recognition Award in Entomology

Bob is Charles E. Palm Scientist, Chair and Director, Plant Protection Program, Boyce Thompson Institute, Ithaca, NY. In addition to his administrative duties, he continues a basic research program in insect cell culture and baculovirus infection mechanisms directed at Lepidoptera of agricultural importance. The technology developed by him and his co-workers has increased our fundamental knowledge in these areas and resulted in the granting of several patents involving new cell lines and protein factors or enhancins. The cell lines increase the cost-effectiveness of fermentation production systems and the enhancins increase infectivity and reduce mean survival time of hosts. These enhancins also increase the toxicity of *Bacillus thuringiensis* to Lepidoptera. Bob has been elected a Fellow of the American Association for the Advancement of Science. Good luck Bob!

#### POSITIONS AVAILABLE

##### Institute of Tropical Agriculture seeks Insect Pathologist/Mycologist Post-Doc

IITA is recruiting a post-doc insect pathologist or mycologist to carry out research on entomophthoralean fungi. Research on *Neozygites floridana* for control of *Mononychellus tanajoa*, comparing local African with imported Brazilian isolates would be the principal activity, but the candidate would be expected to carry out work on other entomophthoralean fungi as well. The applicant should have a PhD in a relevant field, either fungal biology or epizootiology, ideally with a strong mix of laboratory and field experience. Tropical experience is desirable but not essential. As well as English, a working knowledge of French will be an advantage.

The duties of the entomopathologist would be as follows:

1. Coordinate research on the use of *Neozygites sp.* for the control of cassava green mite, *Mononychellus tanajoa*, in collaboration with the UNDP funded ESCaPP project (Ecologically Sustainable Cassava Plant Protection). Research activities are planned on characterisation, *in vivo* and *in vitro* production, biology (includes host range testing) and epizootiology.
2. Carry out epizootiological and microclimate research on local African and imported Brazilian isolates of *Neozygites*, in coordination with similar work in Brazil, the University of Amsterdam, and the IITA/IIBC/DFPV locust project.
3. Carry out research on factors limiting epizootics of *Neozygites* in West Africa.
4. Develop and implement an *in vivo* system for *Neozygites* production.
5. Assist in the development of research activities concerning other entomophthoralean fungi in Africa. This might involve collection, characterisation and epizootiology, and the training of a technician to provide general insect pathology assistance to other scientists.
6. The candidate would be expected to show initiative in developing his or her own work plans in consultation with the IITA insect pathologist and the ESCaPP and locust project leaders.

Send CV and 3 letters of reference to:  
Director,  
IITA Biological Control Program,  
B.P. 08-0932,  
Cotonou, Republic of Benin

### POSITION WANTED

#### Experienced Insect Pathologists seek work

Gouli Vladimir and his wife, Gouli-Ribina Svetlana, Russian specialists in production and application of microbial control products, seek positions for 1 - 2 years in Canada, USA or Europe. They are presently employed in Columbia organizing production of *Trichoderma*, *Beauveria*, *Verticillium lecanii*, and *Entomophthora virulenta*. They also work with *Pseudomonas fluorescens* subsp. *mycolitica* and *Ps. putida*. They have a large number of industrial strains of viruses, bacteria, fungi and nematodes at their disposal.

Dr. Vladimir has published more than 200 papers in Russian, Japanese, Chinese and Rumanian and has 15 patents. He was previously Assistant Director of Science at the All-Union Institute of Biological Plant Protection which was closed with the dissolution of the former USSR. Dr. Svetlana has published 50 papers in the area of biological plant protection.

They can be reached at:

Apartado Postal 020  
Facatativa (Cundinamrca)  
COLUMBIA

### EDITOR'S NOTES

#### Mailing Survey Results

In the last Newsletter, I requested that members inform me if they received their last Newsletter after March 15. The following are the dates members received their Newsletter:

17 - 22 February - North America  
7 - 9 March - Europe, New Zealand & Argentina  
14 - 16 March - Solomon Islands & Australia  
19 - 20 March - Israel & Egypt

I have not heard from Asia and Eastern Europe and hope that the newsletters have arrived by now! Please keep me informed and I shall attempt to improve the delivery to you. Thank you to the 16 members who responded to my survey.

### Work-study leave

I shall be moving to Montpellier, France in August to commence a 13-month study leave with Dr. Jacques Fargues. Consequently the next Newsletter will be processed in France. Please note the earlier deadline.

My new address will be:

URLB, INRA  
Campus International de Baillerguet  
34982 Monferrier le Lez  
FRANCE

Fax: (33) 67 59 90 40

Email: Goettel@montpellier.inra.fr

Please help me by sending submissions well before the deadline. Thanks.

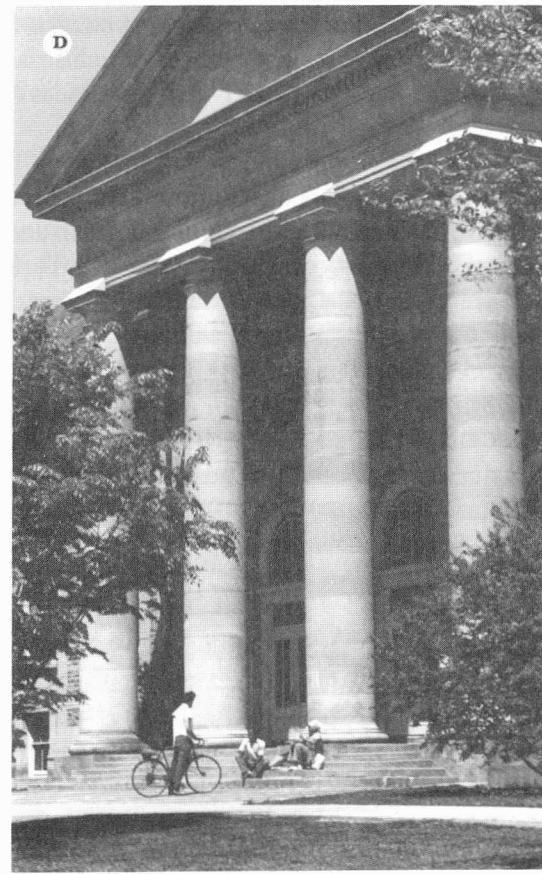
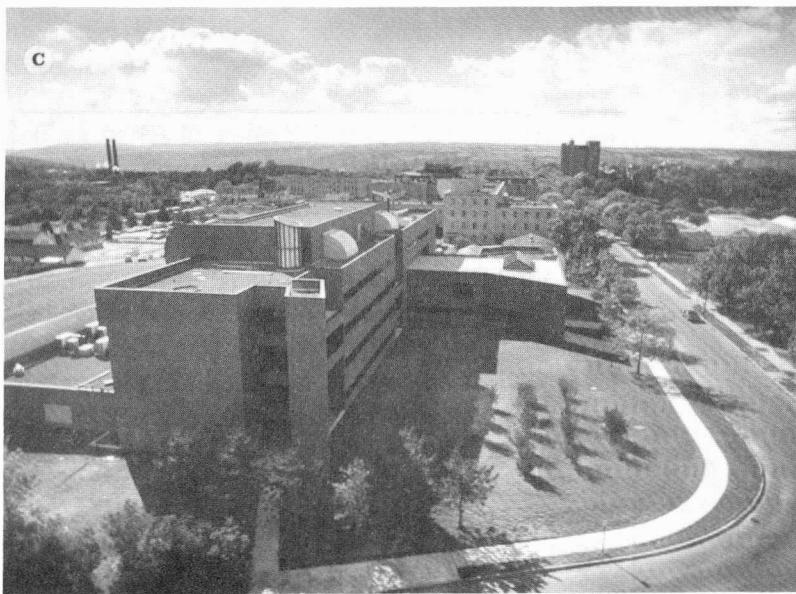
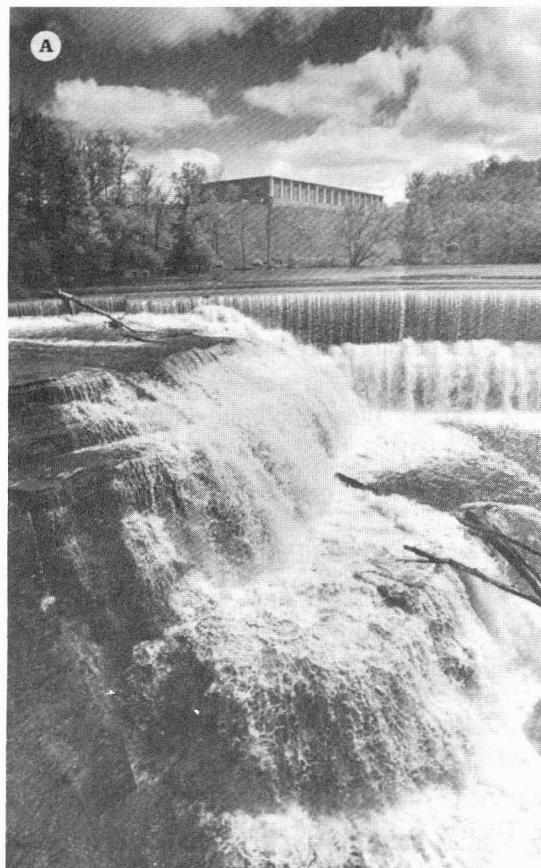
**Deadline for next Newsletter is September 15, 1995.**

### PLEASE DONATE SLIDES

Due to popular demand, the Society is once more sponsoring production of a **Slide Atlas on General Invertebrate Pathology**. Please donate slides of pathogens (molecular, cellular, and organismal levels), diseased hosts, schematic life cycles, etc. All submissions will be greatly appreciated.

Send slides to Dr. Ann E. Hajek, Department of Entomology, Cornell University, Ithaca, New York 14853-0901.

**Please Note:** The **Slide Atlas on Microbial Control** has sold out and is no longer available.



**A.** Cornell's Helen Newman Hall overlooking Beebe Lake. **B.** Sailing on Cayuga Lake. **C.** Boyce Thompson Institute. **D.** Cornell's Goldwin Smith Hall.

Ithaca, New York

**Proposals for  
Establishment of  
Divisions on Bacteria and Insect Viruses**

### Establishment of a Division on Bacteria

Interest in bacterial pathogens of insects continues to grow, largely due to their potential for use as alternatives to synthetic chemical insecticides. Much of the current interest is in the basic and applied biology of the d-endotoxins of *Bacillus thuringiensis* and their use in microbial insecticides and transgenic plants. However, there is also considerable interest in *B. sphaericus*, *B. popilliae*, bacterial diseases of non-insect invertebrates as well as such subjects as host defensive responses to bacteria, symbiotic bacteria, and bacterial systematics.

The Society now has about 900 members, and somewhere between 200-300 of these have as their primary interest research on bacteria. In addition, a large number of the participants at the Annual SIP Meetings, and especially at the International Colloquia held every four years, have as their primary interest bacteria, whether or not they are members of the Society. Research on *B. thuringiensis* has expanded and accelerated to the extent that international meetings on Bt will be held every two years, most likely in conjunction with the Society's annual meetings and international colloquia.

In light of the strong interest in bacteria among a large percentage of the Society's membership, it seems appropriate that a Division on Bacteria be established within the Society. A Division has several purposes, the two most important of which are representing the interests of its members within the Society, and providing input with respect to the scientific programs at the Society's annual meetings and international colloquia. Divisions can also have a say in where meetings are held, nominate candidates for offices of the Society, and on occasion, develop opinions on issues of public interest related to their discipline. Divisions have and elect their own officers, and have the right to set and collect dues for purposes they deem appropriate.

In this insert, you will find the section on Divisions from the Society's Bylaws. These Bylaws set out the conditions for establishment and operation of a Division. The Bylaws are currently being revised, but it is likely that most of the rules under each Section will remain in effect as written. Thus, in order to establish a Division on Bacteria, a request must be signed by twenty members of the Society. However, to expedite establishment I would like to obtain fifty signatures so that I can have a report prepared by the Society's Secretary, Wendy Gelernter, that would be presented to the Council at the SIP meeting at Cornell. For those interested in the establishment of a Division on Bacteria within the Society, please indicate your interest by signing the statement below, and returning it to me as soon as possible, but no later than June 10, 1995.

I/We support the establishment of a Division on Bacteria within the Society for Invertebrate Pathology.

Printed Name

Signature

Date

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Please return this form to Brian A. Federici, Vice President, Society for Invertebrate Pathology, Department of Entomology, University of California, Riverside, CA 92521, U.S.A.

### Establishment of a Division on Insect Viruses

Insect viruses have commanded considerable attention for several decades with respect to their use as insect pest control agents. With the advent of recombinant DNA technology, commercial interest in insect viruses, and particularly the baculoviruses, has increased. The means now exist for direct genetic manipulation of insect viruses to improve virulence, and the resulting rapid action recombinant viruses are viable alternatives to classical chemical insecticides. In the future we should see the application of this technology to other insect virus groups for control of a variety of insect pest species. The genomes of two baculoviruses have now been completely sequenced which greatly facilitates the study of the fundamental biology of these viruses, their interaction with the host and genetic organization. Other areas of recent interest in insect viruses include phylogenetic relatedness of the different insect virus groups, and fundamental research into their biology.

A significant number of the current Society for Invertebrate Pathology membership is primarily interested in insect viruses. A number of international conferences have been staged specifically dealing with baculoviruses - as insect control agents and as protein expression vectors. This field is expanding extremely rapidly and the creation of a division on insect viruses may encourage non-SIP members to become involved in the Society.

The purpose of a Division on Insect Viruses which would elect its own officers, would be to provide ideas for meeting programs both at annual and international meetings, and as a representative voice for the members of the Division. In addition, Division members can nominate officers for the Society, suggest locations for the annual meeting, and voice opinions of public interest concerning insect viruses. For further information about the establishment and function of Divisions within the Society, see the accompanying sheet detailing the Society bylaws.

In order to initiate the process for creation of a Division on Insect Viruses, 20 signatures are required in support of the move. However, as we shall need to show that at least 50 members of SIP would join the Division of Insect Viruses, we are looking for 50 signatures in support of creation of this Division. If you are interested in the establishment of a Division of Insect Viruses, please complete the form below and return it to me no later than 20 June, 1995.

I/We support the establishment of a Division on Insect Viruses within the Society for Invertebrate Pathology.

PRINTED NAME

SIGNATURE

DATE

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Please return to Bryony C. Bonning, Department of Entomology, Iowa State University, 411 Science II, Ames, IA 50011 USA

**From the Society for Invertebrate Pathology Bylaws**

**Article VI. DIVISIONS**

**Section 1. Supervision.** The Council shall exercise supervision of the Divisions (CONSTIT. ART. VI. Sec. 3) through the Secretary.

**Section 2. Establishment.** Divisions may be established by the Council in response to a request signed by at least 20 members of the SOCIETY in good standing and with common scientific interests. The petitioners shall show that no less than 50 members of the Society would choose to become divisional members as soon as the Council approves the establishment of the division. The Secretary shall prepare a report upon said request and submit it to the Council, along with the request.

**Section 3. Membership.** Membership in a Division shall be restricted to Members of the SOCIETY. A member may indicate annually one or more preferred divisional affiliations on an appropriate form included with the annual dues notice, and thereby may vote for the officers of the Division or Divisions specified. Membership in a Division shall remain effective until a member fails to pay or chooses not to pay annual dues for that Division. A member can not be an officer and can not hold appointive positions in more than one Division simultaneously. A Division shall consist of at least 50 members.

**Section 4. Administration.** Divisions shall elect their own officers and committees, may assess dues additional to the normal dues of the Society, may collect and manage their additional funds, and may make rules for government, provided that all their acts and rules shall not be inconsistent with the Constitution and Bylaws of the SOCIETY. The Bylaws of each Division shall be subject to the approval of the Council.

**Section 5. Annual Meeting Program Committee Membership.** The Chairperson of each Division, or duly appointed divisional representative, shall be an *ex officio* member of the Program Committee (Art. VIII, Sec. 4,c).

**Section 6. Reports to the Secretary.** The Chairperson of each Division shall submit to the Secretary of the Society the names of all its officers and members of standing committees within three weeks of their election or appointment, and shall also promptly notify the Secretary of any changes that may have taken place among said officials. Each year the Secretary of each Division must certify the number of members of the Division to the Secretary of the SOCIETY.

**Section 7. Termination.** A Division failing to maintain for two successive years a minimum of 50 members in good standing shall automatically forfeit its title and rights as a Division of the SOCIETY.

The Council may dissolve a Division when said Division shall fail to be supported by the interests of its members in the subject or subjects for the consideration of which it was organized, or when the developments of science and the interests of the SOCIETY require the reapportionment of subjects.